

## Taxonomic studies on the genus *Grandidierella* Coutière (Crustacea, Amphipoda). IV. Indian species

by K. Peethambaran ASARI and Alan A. MYERS

**Abstract.** — Five species of *Grandidierella* are described from India. Three species, *G. macronyx* Barnard, *G. megnae* (Giles) and *G. gravipes* Barnard are at present known only from the oriental region while two species, *G. gilesi* Chilton and *G. bonnieroides* Stephensen have, a wider distribution in world seas. *G. bonnieri* Stebbing is synonymised with *G. megnae* (Giles).

**Résumé.** — Cinq espèces de *Grandidierella* de l'Inde sont décrites. Parmi elles, trois espèces, *G. macronyx* Barnard, *G. megnae* (Giles) et *G. gravipes* Barnard, sont actuellement connues des régions orientales seulement, tandis que les deux autres, *G. gilesi* Chilton et *G. bonnieroides* Stephensen, ont une distribution plus étendue. *G. bonnieri* Stebbing est mis en synonymie avec *G. megnae* (Giles).

K. P. ASARI, *Department of Zoology, Government College, Port Blair, Andaman & Nicobar Islands, India.*

A. A. MYERS, *Department of Zoology, University College, Cork, Eire.*

MYERS (1981) updated RUFFO's (1958) bibliography of the genus *Grandidierella*, and listed twenty six species. To this list must be added two further species, *G. koa* and *G. palama* (BARNARD, 1977) which were omitted in error. In the present work, *G. bonnieri* Stebbing is synonymised with *G. megnae* (Giles), and the number of species of *Grandidierella* Coutière now known from world seas and land-locked lakes is thus twenty seven.

Five species of *Grandidierella* are treated herein, from Indian waters. Of these, three species, *G. macronyx* Barnard, *G. megnae* (Giles) and *G. gravipes* Barnard, are endemic to the oriental region, whilst two species, *G. gilesi* Chilton and *G. bonnieroides* Stephensen, have a wider distribution.

### KEY TO MALE *Grandidierella* spp. OF INDIA

1. Gnathopod 1 carpus and propodus subequal, carpus posterior margin with a single tooth, uropod 1 peduncle lacking an interramal process, uropod 3 ramus uncinately curved... *G. gravipes*  
Gnathopod 1 carpus much larger than propodus, carpus posterior margin with two or more teeth (submarginal tooth may be difficult to discern), uropod 1 peduncle with interramal process, uropod 3 straight ..... 2
2. Gnathopod 2 carpus anterior margin densely setose..... 3  
Gnathopod 2 carpus anterior margin weakly scitiferous..... 4
3. Gnathopod 1 dactylus twice length of propodus, uropod 3 ramus lacking a second article....  
..... *G. macronyx*

- Gnathopod 1 dactylus subequal in length with propodus, uropod 3 ramus with a second article.  
..... *G. megnae*  
4. Gnathopod 2 merus with very long setae (twice length of carpus)..... *G. gilesi*  
Gnathopod 2 merus with relatively short setae (shorter than carpus)..... *G. bonnieroides*

**Grandidierella macronyx** Barnard

(Figs. 1-2)

*Grandidierella megnae* Chilton, 1921 (in part) : 548, fig. 10 m, 10 n, 10 o. [non *G. megnae* (Giles, 1888)].

*Grandidierella macronyx* Barnard, 1935 : 300.

MATERIAL STUDIED : 6 ♂ Vellar estuary, Porto Novo, South India, among algae.

DESCRIPTION

♂ length 5.0 mm. Body pale yellowish with black chromatophores. Head with ocular lobes small, obtuse ; eyes of moderate size, black. Antenna 1 peduncular articles in the ratios 6:8:3 ; article 1 posterior margin with long setae ; article 2 posterior margin with 10-11 fascicles of long setae ; article 3 posterior margin with few setae ; primary flagellum slightly shorter than peduncle with about 15 articles ; accessory flagellum one articulate, less than half length of first primary flagellar article. Antenna 2 stouter and more setose than antenna 1 ; article 4 with 7-8 fascicles of setae on the posterior margin, postero-distal margin with a stout spine ; article 5 shorter than 4 with long setae on posterior margin and with a stout posterodistal spine ; flagellum with about 7 articles each with a postero-distal spine. Labrum ventral margin convex, setose. Mandible palp article ratios 1:2:2 ; article 3 distally subovoid with a few rows of long pinnate setae. Labium mandibular processes relatively short, subacute. Maxilla 1 outer plate with 9-10 spines ; palp article 2 with 6 spines and 5-6 subapical setae. Maxilla 2 normal. Maxilliped outer plate with 8-9 posterior marginal spines ; palp article 2 three times length of article 1 ; article 3 half length of 2 ; dactylus two thirds length of article 3 ; distal spine about 5/6 length of dactylus. Gnathopod 1 very robust : complexly subchelate ; coxa 1 larger than all other coxae, produced anteriorly into a long acute process tipped with 2-3 setae ; basis large, ovoid, narrowing proximally, anterior margin convex, irregular ; carpus massive, twice as long as broad, with almost straight anterior margin, posterior margin produced into a stout, subdistal, marginal tooth and a long, irregular, straight subdistal, inner marginal tooth extending beyond distal margin of carpus, inner posterior margin of carpus setose ; propodus narrow, one third length of carpus, with a flat tongue-like process on the posterior margin, inner and posterior margins heavily setose, palm obsolete ; dactylus elongate, twice length of propodus, with posterior margin setose over distal half. Gnathopod 2 slender ; basis elongate almost parallel sided, anterior margin with small spinules, posterior and inner margin with double row of long setae ; carpus elongate, with anterior and posterior margin heavily setose ; propodus half length of carpus widening distally, palm almost transverse with serrulate margin and defined by three spines ; dactylus strongly toothed, fitting palm. Pereopods 3-4 coxae quadrate, weakly emarginate ventrally.

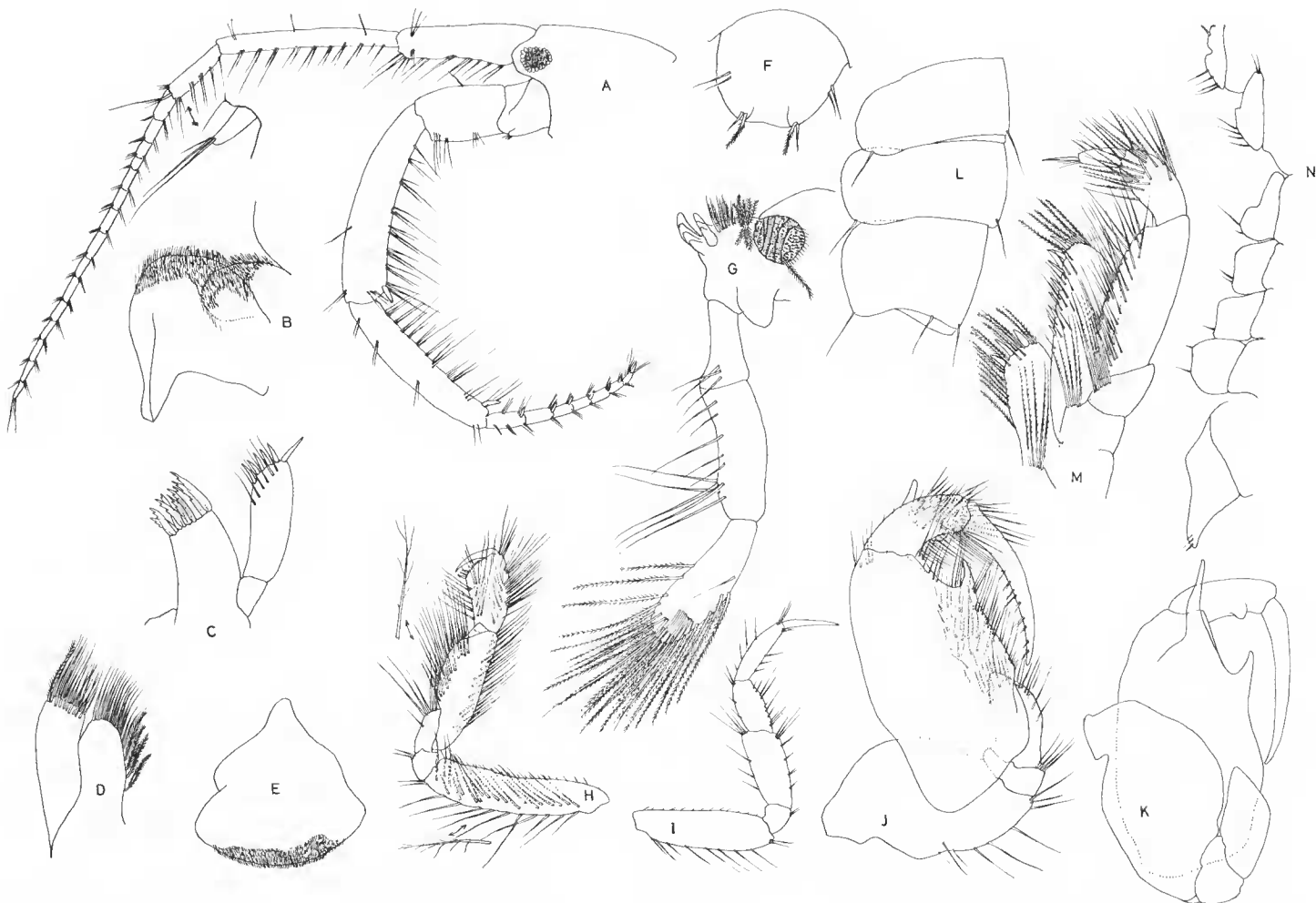


FIG. 1. — *Grandidierella macronyx* Barnard, Vellar Estuary, ♂: A, head and antennae; B, labium; C, maxilla 1; D, maxilla 2; E, labrum; F, telson; G, mandible; H, gnathopod 2; I, pereopod 3; J, gnathopod 1; K, gnathopod 1 (inner face); L, epimera; M, maxilliped; N, coxae.



FIG. 2. — *Grandidierella macronyx*: Barnard, Vellar Estuary, ♂: A, pereopod 6; B, pereopod 7; C, uropod 1; D, uropod 2; E, uropod 3; F, pereopod 4; G, pereopod 5.

Pereopods 5-7 in the length ratios 6:11:12; bases of pereopods 6-7 with numerous long plumose setae on posterior margin. Epimera 1-3 rounded, each with a single postero-ventral seta. Uropod 1 peduncle longer than rami and with a stout, distal, interramal spiniform process; outer ramus a little shorter than inner. Uropod 2 peduncle subequal with shorter outer ramus and lacking an interramal process. Uropod 3 uniramous; peduncle a little broader than long due to development of smoothly rounded flange on inner margin; ramus four times length of peduncle, almost cylindrical, hirsute distally. Telson as long as broad, with slightly emarginate posterior margin; dorsolateral crests each with one pinnate and one simple seta, margins each with 2 setae.

Female unknown.

ECOLOGY : This species lives in tubes constructed from pieces of alga and mud cemented together. It was found in association with *G. bonnieroides* and *G. megnae* in the marine zone of the Vellar estuary.

DISTRIBUTION : Indian endemic.

DISCUSSION : This species was erected by K. H. BARNARD (1935) to include the material described by CHILTON (1921) under the name *G. megnae* (Giles) form II. Thus the original description is based on CHILTON'S (1921) figures and description of the male gnathopod 1 only. The close similarity between the gnathopod 1 of present material and that figured and described by CHILTON leaves little doubt as to their conspecificity, however certain differences are apparent. In particular, CHILTON figures the carpal teeth as continuous with the posterior margin, whereas in present material the more distal tooth clearly arises from the inner surface. Secondly, the process on the posterior margin of the propodus is small and round, whereas it is relatively larger and acute in CHILTON'S (1921) figures. Finally, the posterior margin of carpus and propodus are much more setose in present material.

### ***Grandidierella megnae* (Giles)**

(Figs. 3-4)

*Microdeutopus megnae* Giles, 1888 : 231, pl. 7, fig. 14.

*Grandidierella bonnieri* Stebbing, 1908 : 120, pl. 6.

*Grandidierella megnae* Tattersall, 1922 : 455, pl. 10, figs. 1-12; K. H. BARNARD, 1935 : 297.

MATERIAL STUDIED : 4 ♂ 5 ♀ Vellar estuary, Porto Novo, South India, among algae.

#### DESCRIPTION

♂ length 4.8 mm. Body dull yellowish with black chromatophores. Head with ocular lobes short, obtuse, eyes of moderate size, black. Antenna 1 peduncular articles in the ratios 4:4:2; article 1 posterior margin with long setae; article 2 posterior margin with 7-9 fascicles of long setae; article 3 posterior margin with few long setae; primary flagellum subequal in length with peduncle with about 18 articles, the distal articles with aesthetascs;

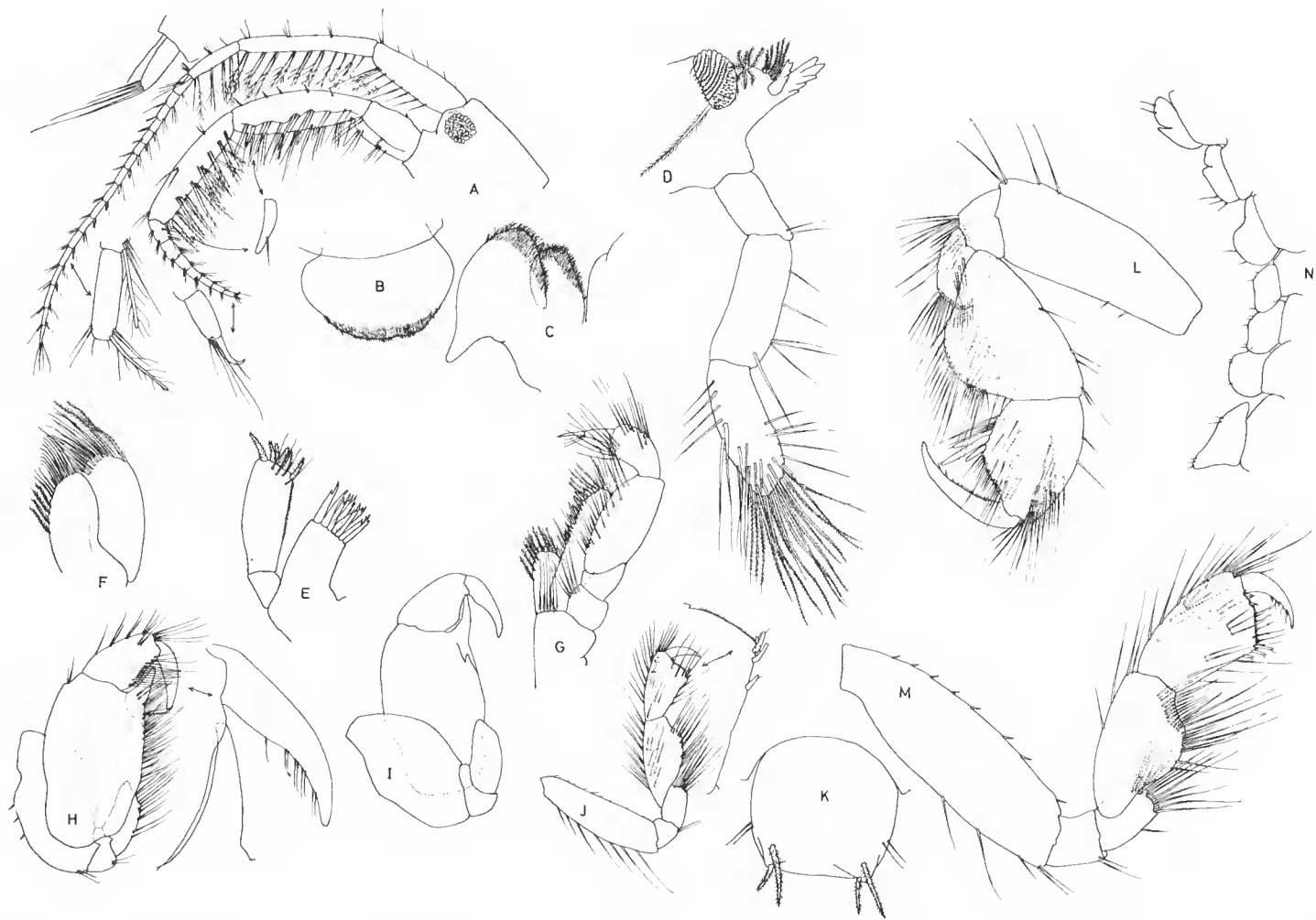


FIG. 3. — *Grandidierella megnae* (Giles), Vellar Estuary, ♂: A, head and antennae; B, labrum; C, labium; D, mandible; E, maxilla 1; F, maxilla 2; G, maxilliped; H, gnathopod 1; I, gnathopod 1 (inner face); J, gnathopod 2; K, telson; N, coxae. — ♀: L, gnathopod 1; M, gnathopod 2.

accessory flagellum one articulate and half as long as first primary flagellar article. Antenna 2 stouter and more setose than antenna 1 ; articles 4 and 5 subequal, each with a double row of long inner marginal setae and a stout spine at the posterior distal apex ; flagellum with about 7 articles, each with a posterodistal spine. Labrum ventral margin convex, setose. Mandible, palp article ratios 1:2:2 ; article 3 relatively broad parallel-sided, subtruncate with a few rows of long pinnate setae. Labium mandibular processes relatively short, subacute. Maxilla 1 outer plate with 9-10 spines ; palp article 2 with 5-6 spines and 3-4 subapical setae. Maxilla 2 normal. Maxilliped, outer plate with 8-9 posterior marginal spines ; palp, article 2 three times length of article 1 ; article 3 half length of 2 ; dactylus half length of article 3 and subequal with distal spine. Gnathopod 1 robust, complexly subchelate ; coxa 1 larger than all other coxae, produced anteriorly, subacute, tipped with 2-3 small setae ; basis large, ovoid, anterior margin smoothly convex ; carpus massive, almost twice as long as broad, anterior margin weakly excavate proximally, posterior margin almost straight, setose, posterior distal margin produced into a long tooth, often reaching to four fifths length of propodus, proximal to which, on the inner face of the ventral margin, is a further much smaller tooth ; propodus subovoid, narrowing distally, with a weak subdistal excavation, posterior margin moderately setose, palm obsolete ; dactylus equal in length to propodus, with few setae on posterior margin. Gnathopod 2 slender ; basis elongate, almost parallel sided, anterior margin with few spinules, posterior margin with 8-9 long setae ; carpus trapezoidal, strongly setose, with slightly expanded median posterior margin ; propodus smaller than carpus, strongly expanded distally, palm moderately broad, almost transverse, with serrulate margin, and defined by 2-3 spines ; dactylus fitting palm, inner margin with 3-4 teeth. Pereopods 3-4 coxa subquadrate, weakly emarginate ventrally. Pereopods 5-7 in the length ratios 6:9:10 ; bases of pereopods 6-7 with numerous long plumose setae on posterior margin. Epimera 1-3 rounded, each with a single postero-ventral seta. Uropod 1 peduncle longer than rami and with a stout, distal, interramal spiniform process ; outer ramus a little shorter than inner. Uropod 2 peduncle subequal with shorter outer ramus and lacking an interramal process. Uropod 3 uniramous ; peduncle broader than long due to development of flange on inner margin, flange with medial seta on dorsal surface and finely setose margin ; ramus rod-like, four times as long as peduncle, with small second article. Telson as long as broad ; dorsolateral crests each with 2 pinnate setae, margins each with 2 setae.

♀ length 4.0 mm. Antennae similar to those of male but more slender and smaller. Gnathopod 1 coxa quadrate ; basis three times as long as broad ; carpus expanded medially, subtrapezoidal ; propodus broadly ovoid, two thirds as long as carpus, palm oblique, defined by 3 stout spines, palmar and posterior margin strongly setose ; dactylus subequal with propodus. Gnathopod 2 basis more than three times as long as broad ; carpus posterior margin slightly expanded, with long setae ; propodus four fifths length of carpus, distally expanded, palm almost transverse, defined by 2 spines, palmar margin serrulate ; dactylus fitting palm.

ECOLOGY : In tubes constructed of pieces of alga and mud cemented together. In association with *G. bonnieroides* and *G. macronyx* in the marine zone of the Vellar estuary.

DISTRIBUTION : India, Thailand, China.

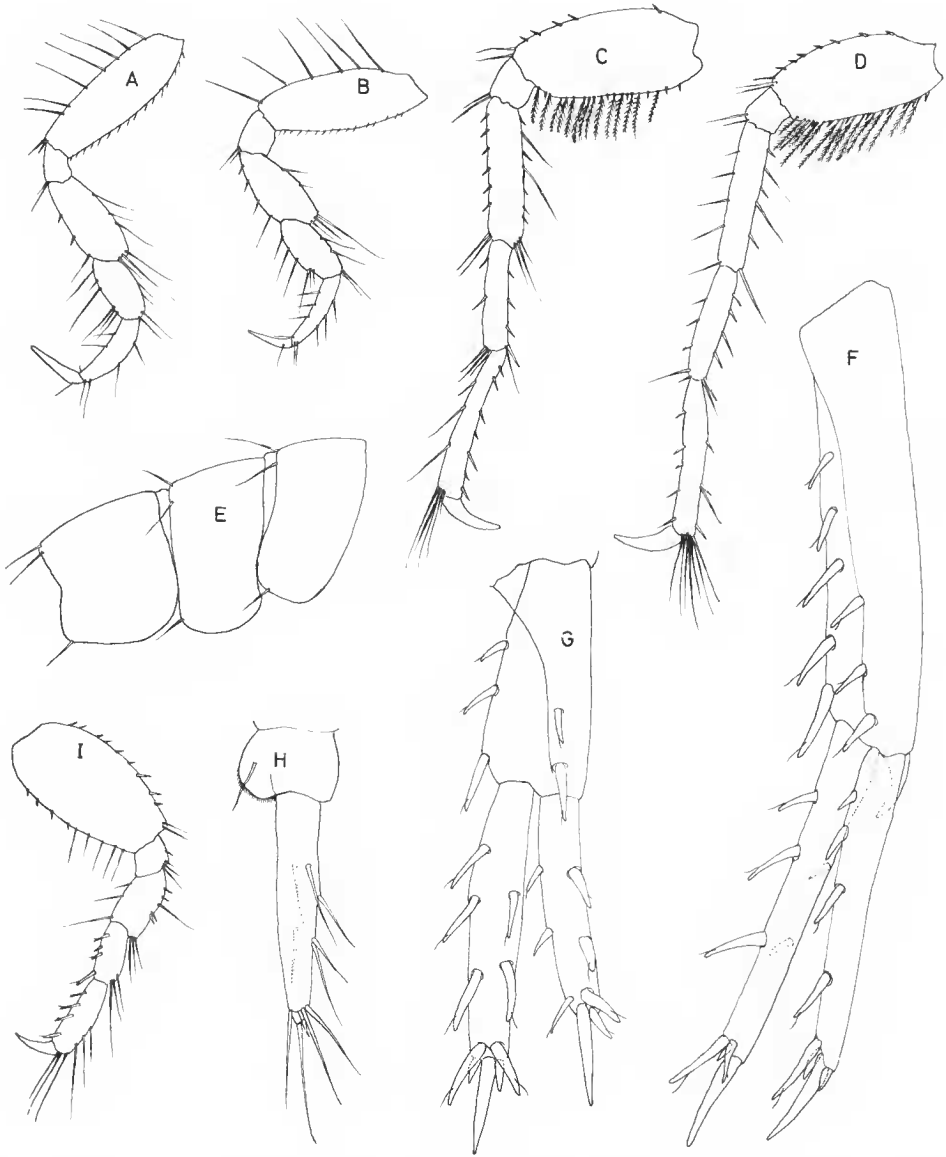


FIG. 4. — *Grandidierella megnae* (Giles), Vellar Estuary, ♂ : A, pereopod 3 ; B, pereopod 4 ; C, pereopod 6 ; D, pereopod 7 ; E, epimera ; F, uropod 1 ; G, uropod 2 ; H, uropod 3 ; I, pereopod 5.



DISCUSSION : This species was erected by GILES (1888) for specimens collected from Thailand (Megna flats) and the Bay of Bengal. GILES' description was brief. TATTERSALL (1922) offered a more detailed description, based on material from Whangpoo River (China) but synonymised his material with *G. megnae* 'form 1' of CHILTON (1921), a species placed by MYERS (1970) in the synonymy of *G. bonnieroides* Stephensen. Present material closely resembles the descriptions of GILES (1888) and TATTERSALL (1922), but neither author noted the presence of an accessory tooth on the male gnathopod 1 carpus. This tooth, however, can only be observed if the appendage is observed from the inner face and was probably overlooked by GILES and TATTERSALL. Additionally, TATTERSALL (1922) figures the third uropod as medially expanded, whereas in present material the lateral margins of this appendage are approximately parallel-sided. MYERS (1970) had no material of *G. megnae* to hand and therefore made "no attempt... to determine the relationship of that species with *G. bonnieri* Stebbing". The type material of *G. bonnieri* Stebbing (B.M. (N.II.) 1928.12.112810-2) has been reexamined by one of us (A.A.M.) and found to be identical with *G. megnae* (Giles).

### **Grandidierella gravipes** Barnard

(Figs. 5-6)

*Grandidierella megnae* Chilton, 1925 : 535, fig. 2 ; SCHELLENBERG, 1925 : 166, fig. 7 [non *Grandidierella megnae* (Giles, 1888)].

*Grandidierella gravipes* Barnard, 1935 : 297, fig. 18.

MATERIAL STUDIED : 2 ♂ Killai backwaters, Porto Novo, on floating wood encrusted with algae.

#### DESCRIPTION

♂ length 5.6 mm. Body pale yellowish with dark brown chromatophores. Head with ocular lobes obtuse ; eyes of moderate size, black. Antenna 1 peduncular articles in the ratios 2:3:1 ; article 1 posterior margin with few setae and a spine on the posterior distal margin ; article 2 narrow and moderately setose ; primary flagellum longer than peduncle, with about 26 articles ; accessory flagellum one articulate about half as long as first primary flagellar article. Antenna 2 stouter, more setose and much shorter than antenna 1 ; articles 4 and 5 subequal, each with 8-9 fascicles of long setae on the posterior margin and with a short stout spine at the posterodistal apex ; flagellum with about 6 articles, each article except article 1 with a posterodistal spine. Labrum ventral margin convex, setose. Mandible palp article ratios 2:3:4 ; article 3 broad medially, truncate, with several rows of distal setae. Labium mandibular processes short, subacute. Maxilla 1 outer plate with 8-9 spines ; palp article 2 with 6 spines and about 6 subapical setae. Maxilla 2 normal. Maxilliped, outer plate with about 6 posterior marginal spines ; palp, article 2, twice length of article 1 ; article 3 about three quarters length of 2 ; dactylus three fifths length of article 3 ; distal spine a little shorter than dactylus. Gnathopod 1 large and robust, complexly subchelate ; coxa moderately elongate, unproduced and rounded anteriorly, with slightly emarginate ventral margin carrying 2 setae ; basis robust, ovoid,



FIG. 5. — *Grandidierella gravipes* Barnard, Killai Backwaters, ♂: A, head and antennae; B, maxilla 1; C, maxilla 2; D, labium; E, labrum; F, maxilliped; G, mandible; H, pereopod 3; I, pereopod 4; J, gnathopod 1; K, gnathopod 2; L, telson; M, coxae; N, epimera.

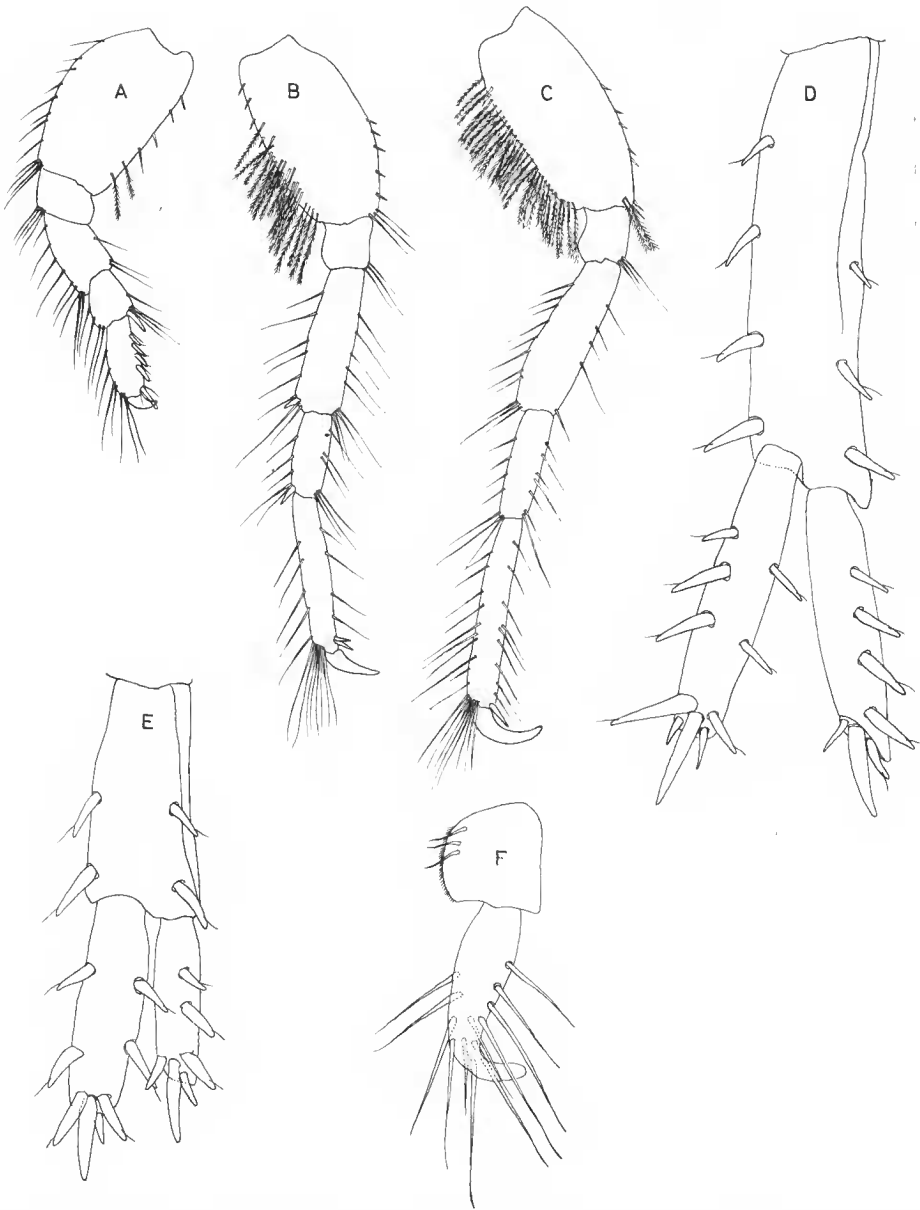


FIG. 6. — *Grandidierella gravipes* Barnard, Killai Backwaters, ♂: A, pereopod 5; B, pereopod 6; C, pereopod 7; D, uropod 1; E, uropod 2; F, uropod 3.

posterior margin rounded, anterior margin finely serrulate with few setae; carpus as broad as long, posterior margin erenulate, straight or weakly concave, posterior distal apex produced into an acute tooth; propodus equal in length to carpus, narrowing distally, with strongly convex anterior margin; palm oblique, crenulate, posterior margin with 4 short proximal spines; dactylus curved, reaching second spine of posterior margin of propodus. Gnathopod 2 slender; coxa deep with convex anterior margin, ventral margin with two setae; basis elongate, broader distally, with long setae on posterior margin; carpus anterior margin convex, posterior margin almost straight, setose; propodus almost three quarters length of carpus with convex anterior and straight posterior margins, palm almost transverse with finely serrulate margin and defined by 3-4 spines; dactylus projecting slightly beyond palmar angle. Pereopod 3 coxa subquadrate. Pereopod 4 coxa subtriangular. Pereopods 5-7 in the length ratios 4:6:7; bases of pereopods 6-7 with numerous long plumose setae on the posterior margin. Epimera 1-3 rounded each with single postero-ventral seta. Uropod 1 peduncle longer than rami, lacking an interramal process; outer ramus slightly shorter than inner. Uropod 2 peduncle subequal in length with longer inner ramus and lacking in interramal process. Uropod 3 uniramous; peduncle as long as broad, inner margin finely setulose with 3 submarginal spine-setae; ramus narrow distally, curved uncinately outwards, margins with long spines. Telson with emarginate posterior margin dorsolateral crests each with 4 long spine setae, margins each with 2 setae.

Female not represented in present collections.

ECOLOGY : On algal encrusted floating wood.

DISTRIBUTION : India, Thailand (Tale Sap).

DISCUSSION : Porto Novo material agrees in general with the original description of BARNARD (1935). The present specimens however appear to be subadult since the structure of the male gnathopod 1 is somewhat intermediate between the figures of the adult and juvenile gnathopod 1 given by BARNARD (1935). In particular, the groove on the outer distal margin of the basis, the small spinous process of the posterodistal margin of the carpus, and the teeth on the posterior margin of the propodus of the adult male gnathopod 1 figured by BARNARD are not present in the Porto Novo material. In addition, the carpus and propodus are subequal in present material, whereas the carpus is distinctly larger than the propodus in BARNARD'S figure of the adult male gnathopod 1. On the other hand, the figure of the juvenile male gnathopod 1 given by BARNARD (1935) agrees well with the present material though has a distinctly more 'immature' appearance. It is unfortunate that BARNARD (1935) gives no indication of the size of his specimens.

### *Grandidierella gilesi* Chilton

(Figs. 7-8)

*Grandidierella gilesi* Chilton, 1921 : 552, fig. 11; 1925 : 537; BARNARD, 1935 : 300; SCHELLENBERG, 1938 : 93; NAYAR, 1959 : 40, pl. 14, fig. 6; LMBACH, 1967 : 90, pl. 33; SIVAPRAKASAM, 1970 : 157; LEDOYER, 1979 : 152, fig. 8; MYERS, 1981 : 222, fig. 6.

MATERIAL STUDIED : 300 + ♂♂ ♀♀ and immature, Killai backwaters, from washings of *Crasostrea madrasensis*.

#### DESCRIPTION

♂ length 5.1 mm. Body brownish-yellow with black chromatophores. Head with ocular lobes rather narrow; eyes of moderate size, black. Antenna 1 peduncular articles in the ratios 8:9:3, all articles weakly setiferous primary flagellum subequal with peduncle, with about 14 articles; accessory flagellum minute, less than one third length of first primary flagellar article. Antenna 2 stouter than antenna 1, weakly setiferous; articles 4 and 5 subequal; article 4 with a spine at the posterior distal apex; flagellum with about 4 articles, the last two articles each with a posterodistal spine. Labrum ventral margin emarginate, setose. Mandible, palp article ratios 2:3:3; article 3 slender, almost rod-shaped, narrowing distally, with 7-8 short and a few long pinnate setae. Labium mandibular processes small, acute. Maxilla 1 outer plate with 8-9 spines; palp article 2 with 4 spines and 3-4 apical setae. Maxilla 2 normal. Maxilliped, outer plate with numerous plumose setae on posterior margin; palp, article 2 twice length of article 1; article 3 a little under half length of 2; dactylus half length of article 3 and subequal with distal spine. Gnathopod 1 massive, complexly subchelate; coxa small, ventrally emarginate, weakly produced anteriorly, rounded, anterior margin with 1 seta; basis large, posterior margin convex with few setae, anterior margin irregular more or less straight; carpus massive, posterior distal margin produced into an acute tooth, distal margin with a conical process, in addition, two small teeth present on inner face, one posterior submarginal, the other median distal, posterior margin with distinctive row of plumose setae; propodus a third as long as and a quarter as wide as carpus, weakly expanded medially with few setae, palm poorly defined; dactylus medially expanded, asetiferous. Gnathopod 2 very slender; coxa small, subquadrate; basis elongate, expanded distally; merus subovoid with a fascicle of very long plumose setae on anterior margin; carpus slightly expanded medially with 2 rows of long plumose setae on the posterior margin; propodus elongate with characteristic oblique row of long plumose setae medially on inner face, and with a few posterior marginal setae; palm carried forward by extension of posterior margin, approaching a chelate state, palmar margin serrulate with 4 submarginal spines; dactylus fitting palm. Pereopods 3-4 coxa subquadrate. Pereopods 5-7 in the length ratios 6:9:11, bases of pereopods 6-7 with numerous long plumose setae on both anterior and posterior margins. Epinera 1-3 rounded, each with a single posteroventral seta. Uropod 1 peduncle almost twice as long as rami and with a stout, distal, interramal spiniform process; rami subequal. Uropod 2 peduncle longer than rami, distally wide, lacking an interramal process. Uropod 3 uniramous, peduncle as broad as long with one spine-seta on each lateral margin, inner margin serrulate; ramus one and a half times length of peduncle with a small second article. Telson broader than long with slightly emarginate posterior margin, dorsolateral crests each with one pinnate seta and long paired setae, lateral margins also with small paired setae.

♀ length 5.1 mm. Gnathopod 1 basis twice as long as broad; merus distally rounded with numerous long plumose setae; carpus subovoid with row of long plumose setae on posterior margin; propodus subequal in length, but narrower than carpus, palm oblique, irregular, with a prominence adjacent to the insertion point of the dactylus, margin serru-

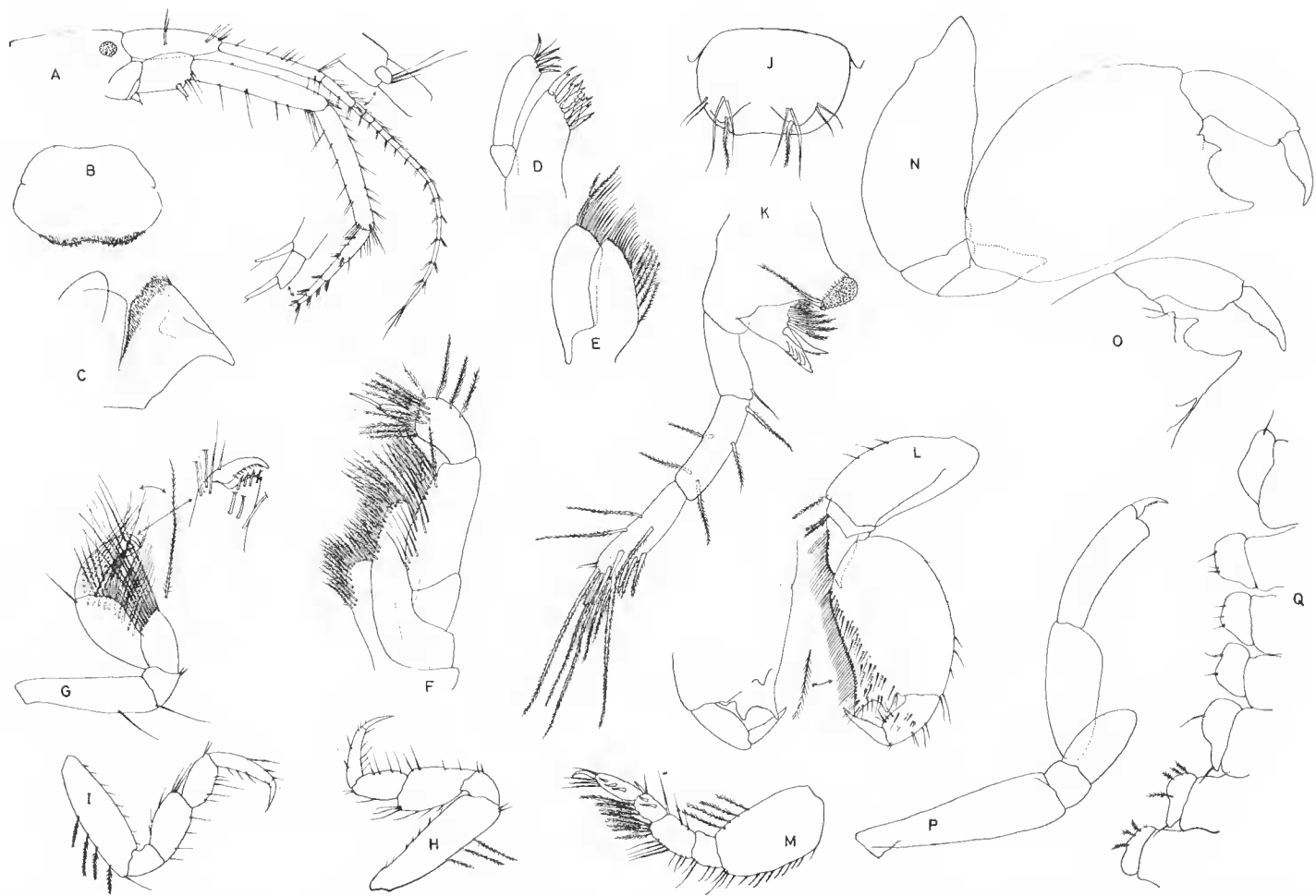


FIG. 7. — *Grandidierella gilesi* Chilton, Killai Backwaters, ♂: A, head and antennae; B, labrum; C, labium; D, maxilla 1; E, maxilla 2; F, maxilliped; G, gnathopod 2; H, pereopod 3; I, pereopod 4; J, telson; K, mandible; L, gnathopod 1; M, pereopod 5; N, gnathopod 1 (hyperadult); O, gnathopod 1 (hyperadult, inner face); P, gnathopod 2 (hyperadult); Q, coxae.

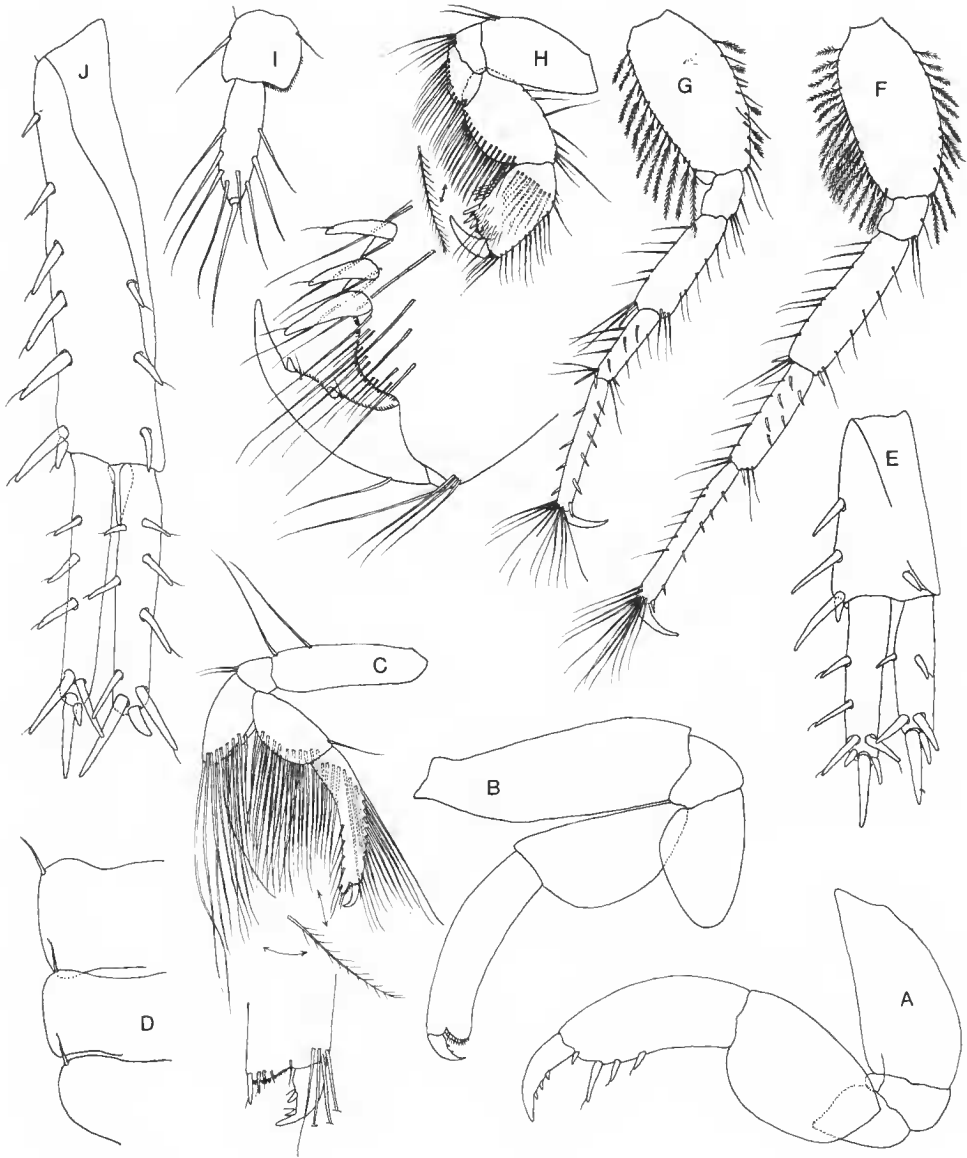


FIG. 8. — *Grandidierella gilesi* Chilton, Killai Backwaters, ♀: A, gnathopod 1; B, gnathopod 2; C, gnathopod 3; H, gnathopod 4. — ♂: D, epimera; E, uropod 2; F, pereopod 7; G, pereopod 6; I, uropod 3; J, uropod 1.

late with a few submarginal setae ; posterior margin of propodus with one median and 3 apical spines ; dactylus stout, fitting palm. Gnathopod 2 not significantly differing from that of the male.

ECOLOGY : This species builds flat tubes in the mud and silt associated with the shells of oysters.

DISTRIBUTION : India, Thailand, Java, South China Sea, Australia, and possibly Madagascar (but see MYERS, 1981).

DISCUSSION : This species has never before been described adequately. This may be due in part to the fact that until very recently the peculiar gnathopod 2 of both sexes was considered to be unique and immediate identification on the basis of gnathopod structure was thought possible. MYERS (1981), however, described a second species (*G. exilis* Myers) with very similar gnathopod morphology. In the same paper, MYERS figured *G. gilesi* from Australia, but since only scant material was available at that time, a description and more complete figures were held over until the present abundant material from Porto Novo could be analysed.

### ***Grandidierella bonnieroides* Stephensen<sup>1</sup>**

(Figs. 9-10)

*Grandidierella bonnieroides* Stephensen, 1948 : 12, fig. 3.

MATERIAL STUDIED : 300+ ♂♂ ♀♀ and immature, Vellar-Coleroon estuarine complex, Porto Novo, amongst algae in brackish water.

#### DESCRIPTION

♂ length 7.0 mm. Body pale yellowish with dark brown chromatophores. Head with ocular lobes obtuse ; eyes of moderate size, black. Antenna 1 peduncular articles in the ratios 5:7:2, all articles sparsely setiferous ; primary flagellum longer than peduncle with about 20 articles ; accessory flagellum one articulate, less than half length of first primary flagellar article. Antenna 2 stouter and shorter than antenna 1, only moderately setiferous ; articles 4 and 5 subequal ; flagellum with about 6 articles each with a posterodistal spine. Labrum ventral margin weakly convex, setose. Mandible palp article ratios 5:8:8 ; article 3 slender, almost rod shaped, narrowing terminally with few spines and long apical and subapical pinnate setae. Labium mandibular processes moderately long, acute. Maxilla 1 outer plate with 10-11 spines ; palp article 2 with 5 apical spines and a few apicomedial setae. Maxilla 2 normal. Maxilliped outer plate with about 9 posterior marginal spines ; palp article 2 twice as long as article 1 ; article 3 about half as long as 2 ; dactylus about three fifths length of article 3 ; distal spine less than half length of dactylus. Pereon segment 1 with large, backwardly directed sternal process. Gnathopod 1 coxa

1. For a full synonymy, see MYERS, 1970, 1981.



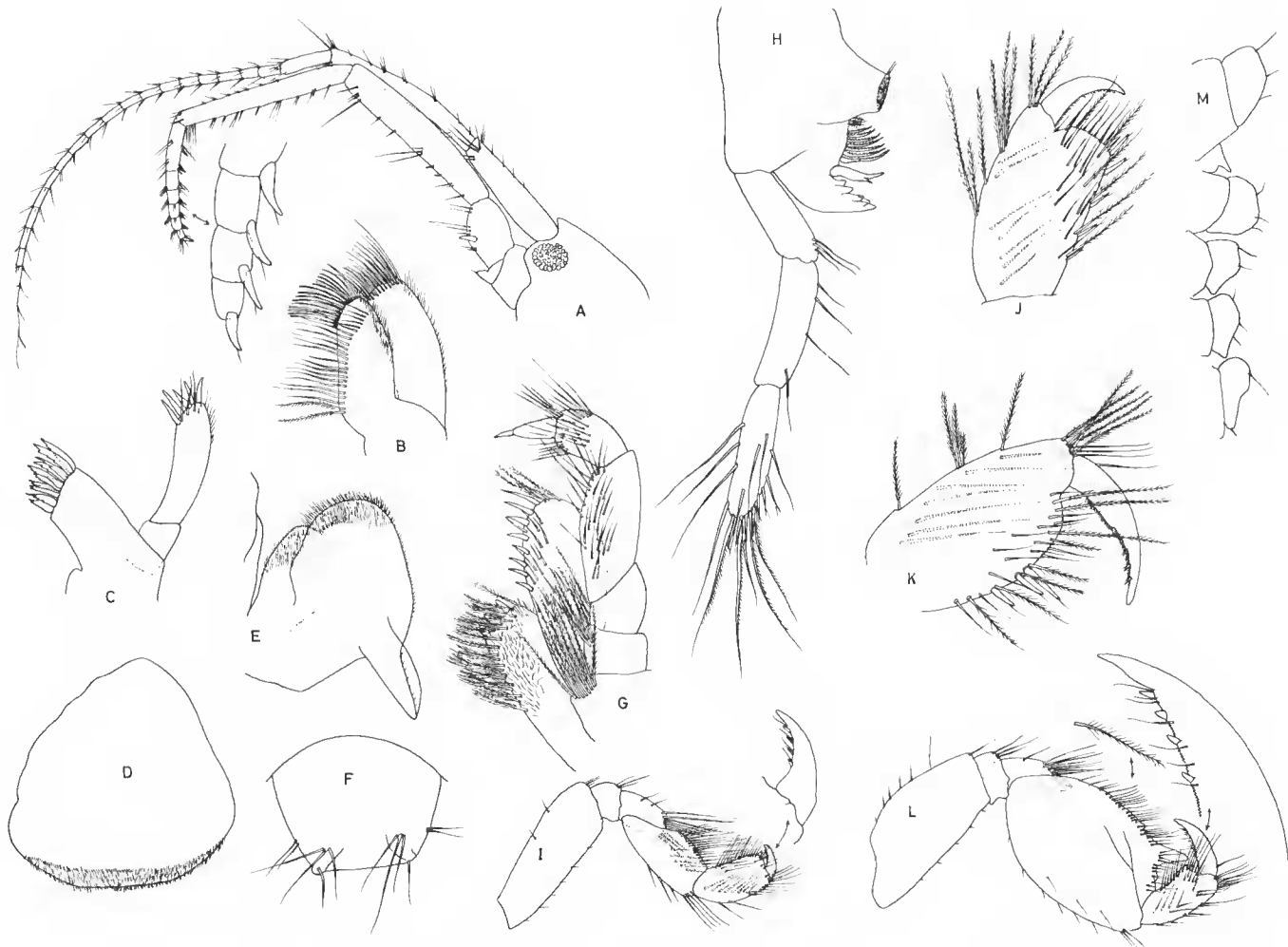


FIG. 9. — *Grandidierella bonnieroides* Stephensen, Vellar Estuary, ♂: A, head and antennae; B, maxilla 2; C, maxilla 1; D, labrum; E, labium; F, telson; G, maxilliped; H, mandible; I, gnathopod 2; L, gnathopod 1; M, coxae 1-5. — ♀: J, gnathopod 2; K, gnathopod 1.

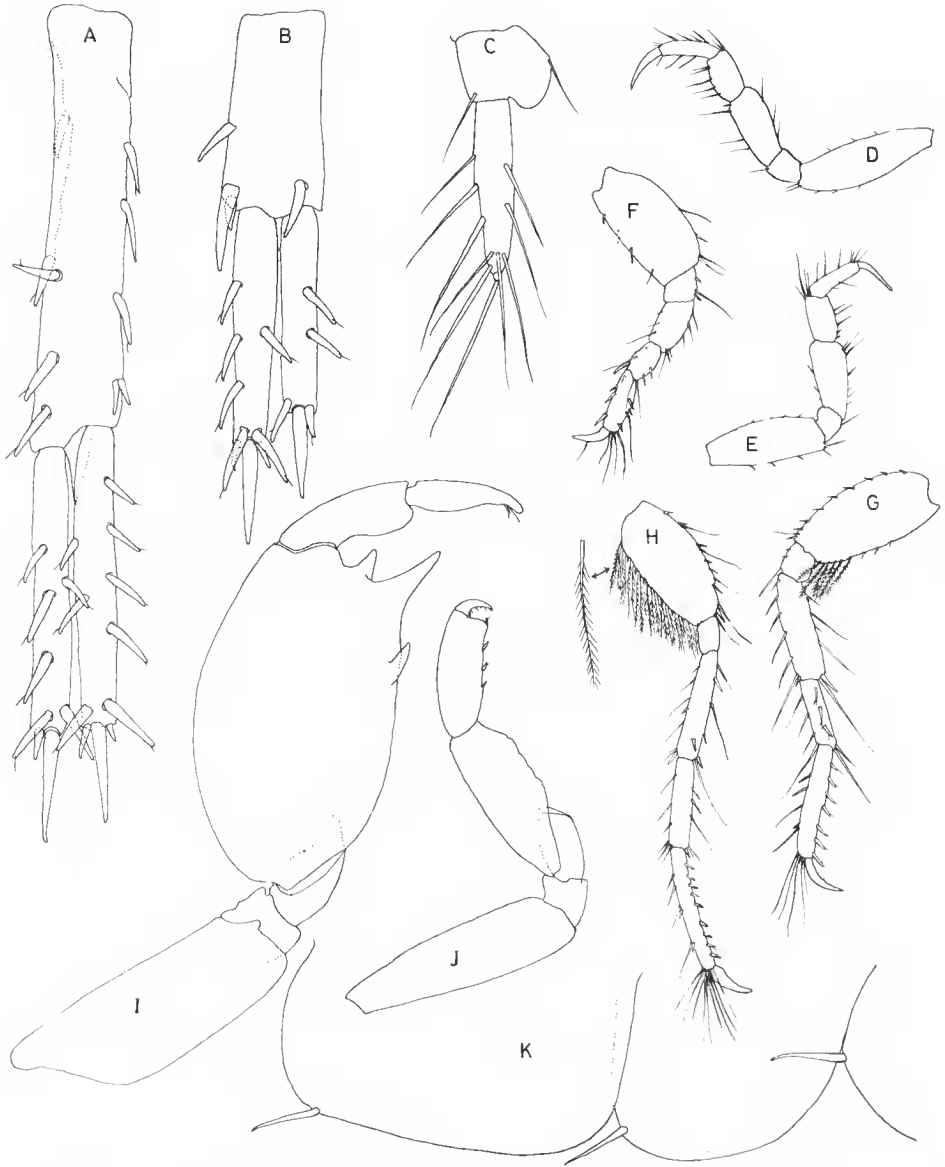


FIG. 10. — *Grandidierella bonnieroides* Stephensen, Vellar Estuary, ♂ : A, uropod 1 ; B, uropod 2 ; C, uropod 3 ; D, pereopod 3 ; E, pereopod 4 ; F, pereopod 5 ; G, pereopod 6 ; H, pereopod 7 ; I, gnathopod 1 (hyperadult) ; K, epimera. — ♀ : J, gnathopod 2.

broader than long, subrectangular, anterior margin rounded, unproduced ; basis twice as long as broad, weakly setiferous ; carpus large, subovoid, one and a half times as long as broad, the posterior distal margin produced into a slender, acute tooth, proximal to which on the distal margin is a shorter conical tooth, inner face of posterior margin with a small mediobasal tooth ; propodus moderately expanded distally, posterior margin concave proximally ; dactylus unguiform. Gnathopod 2 coxa subquadrate ; basis elongate, broader distally ; carpus elongate, posterior margin crenulate, setose ; propodus about three quarters length of carpus with weakly convex anterior and approximately straight posterior margin, palm transverse, defined by one spine ; dactylus fitting palm. Pereopods 3-4 coxae evenly convex anteriorly, produced into a triangular process posteriorly. Pereopods 5-7 in the length ratios 4:6:7 ; pereopods 6-7 with long plumose setae on the posterior margin of the basis. Epimera 1-3 rounded, each with a single posteroventral seta. Uropod 1 peduncle one and a half times length of rami, with a stout, distal, interramal spiniform process ; rami subequal. Uropod 2 peduncle broad, as long as smaller outer ramus, lacking an interramal process. Uropod 3 uniramous ; peduncle broader than long, with strongly expanded flange on inner margin, which carries one spine-seta ; ramus two and a half times as long as peduncle with a small second article. Telson as broad as long with nearly straight ventral margin, dorsolateral crests each with a group of 3 long spine-setae, lateral margins each with 2 setae.

♀ length 5.2 mm. Gnathopod 1 basis elongate with almost parallel margins ; carpus subovoid ; propodus only a little smaller than carpus, palm oblique, defined by two spines, palmar margin with few spinules and submarginal plumose setae ; dactylus elongate, three quarters length of propodus. Gnathopod 2 not significantly different from that of male.

ECOLOGY : In Porto Novo this species is common amongst algae. In other regions it is also common amongst phanerogamms and is especially associated with mangrove litter.

DISTRIBUTION : Essentially circumtropical, though not yet reported from Pacific coasts of the Americas.

DISCUSSION : This species appears to exhibit distinct local variation particularly in the West Atlantic (see MYERS, 1970). The possibility that this ' species ' may in fact be a group of sibling species cannot be entirely dismissed. A detailed morphometric analysis of ' *G. bonnieroides* ' from a wide range of localities throughout the tropics would be particularly illuminating.

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